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KOOTENAI NATIONAL FOREST

CHECK SURVEY
1939

by
Carroll Heath
Agent

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ANALYSIS OF 1939 SURVEY DATA
AND
RECOMMENDATIONS FOR CONTROL

by
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CHECK SURVEY 1939

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During the 1938 season the Kootenai National Forest was covered by an intensive bark-beetle survey. Data obtained from this project revealed a severe infestation of the mountain pine beetle within the Benning and North Keeler units of the Keeler Creek drainage. Although there were a few other areas where the situation was somewhat alarming in these two units, conditions warranted the institution of control. An appropriation of \$7,000 was obtained and control measures were instituted early in May 1939.

To determine the benefits derived from this control project as well as the need for maintenance work during the present season, the two areas where control had been conducted, as well as a few others, were resurveyed during the latter part of August 1939. The results of this check survey follow:

SUMMARY OF 1938-1939 DATA

Name of Unit	: Acres	: Infested trees per acre 1939	: Total number of: Infested trees: 1938	: Change in Status of 1939	: Infestation
North Keeler	: 1,840	: .176	: 600	: 323	: -46%
Benning Creek	: 1,720	: .236	: 724	: 405	: -44%
Lower Keeler	: 500	: .303	: 466	: 151	: -67%
Star Creek	: 2,400	: .122	: 1718	: 292	: -83%

6460

1171

NORTH KEELER

In the north fork of Keeler Creek the white pine is concentrated along the creek bottoms, with only occasional patches on the slopes. Trees are large and mature. Only one small area of an acre or more showed evidence of past infestation, with practically 100 percent of the pine having been killed in the past several years. No 1939 infestation was found on the strips run in this portion of the area. However, six 1939 attacks were found near decks which had been burned during the spring control job.

In Surprise Draw the survey revealed 12 new attacks, with 10 of them being near burned decks. In addition to the trees recorded on strip, one other group of 4 was found near a burned deck.

In most instances the attacks, which varied from egg to new adults, were quite heavy. The size of the trees attacked ranged from 8 inches to 2 feet d.b.h.

Three attacks, all in the egg stage, were found at the end of the Keeler Creek road. In this area a large percent of the residual pine, which was being attacked by secondary beetles, has been damaged by logging operations.

BENNING CREEK UNIT

No 1939-infested white pine were found in the west fork of Benning Creek. Past losses in this area have been very light. No control work was done in this area.

In the main drainage of Benning Creek 17 1939 attacks were found. All attacks with the exception of one windfall were found near decks of

infested logs that had been burned or peeled during the spring control operation.

In most cases the new attacks were found near decks on which there was some unburned bark surface or where the tree had been peeled instead of burned.

LOWER KEELER

In the Lower Keeler Creek and Cheer Creek drainages of this unit, the white pine trees are mature and range from 2 feet to $3\frac{1}{2}$ feet in diameter. Pine type is not confined to any area, being well distributed throughout the drainage. No 1939 infestation was found and only occasional evidence of old bug kill.

In the narrow strip of pine which extends east from the end of the Lower Keeler Creek road, along the creek bottom for about three miles, 20 1939 attacks were found. There are some small patches of pine where practically 100 percent of the trees have been killed.

The timber stands of this unit do not appear to be in a very healthy condition, as a number of trees seem to be dying from causes other than insect attack. Ips and other secondary insects have attacked many of the smaller trees.

STAR CREEK

The white pine stands of the Star Creek unit are found along the creek bottoms in a strip which averages about 20 chains in width. Above this strip white pine gives way to hemlock and larch. The lower portion of the Star Creek drainage has been logged during the past

summer, with seed trees comprising the residual stand. No 1939 attacks of the mountain pine beetle were found in this area.

Within the 1939 Raymond Creek (west fork of Star Creek) area, where logging is now being conducted, 5 new beetle attacks were recorded. Along the road constructed this spring, about 95 percent of the pine trees felled in clearing the right-of-way were infested, the brood being mostly in the pupal stage. I am told that these down trees are to be salvaged yet this year. Several groups of 3 and 4 newly attacked trees were found rather close to this road, where the infestation has apparently spread from the down trees.

The majority of the infestation is localized in the area between the Star Creek and Raymond Creek roads and the forks of the two creeks, an area about 1 mile long and 10 to 20 chains wide.

Within the Star Creek portion of this unit only four 1939 attacks were found in 20 acres of strip. There was one group of three trees with broods of pupae and new adults in two of them, from which there had been a partial emergence. The third tree was a new attack, apparently originating from the other two trees. From the evidence of past losses in this area there has been a rather severe infestation going for the past several years, with a large percent of the stand having been killed.

The timber in this area has been marked for cutting and may possibly be logged yet this year. Two groups of four and six 1938-infested trees were found along the stream bottom; however, no 1939 attacks were recorded in the heaviest pine type.

MADGE CREEK
CAMP CREEK

No sample strip was run in these units, the survey being confined to a rather thorough examination of the small area of white pine. In the Camp Creek area the white pine lies in a narrow strip about $2\frac{1}{2}$ miles long and 4 to 5 chains wide. Trees are large and mature generally. On a zig-zag course through the stand 16 1939 attacks and 331 green trees were recorded. Broods were in all stages from eggs to new adults, with in some instances a partial emergence. There had been considerable pitching out of 1939 attacks. Infestation appears to be about the same as 1938, with about 5 percent of stand being killed this year.

The white pine stands of the Madge Creek area are located on the south side of the creek in a strip about $1\frac{1}{2}$ miles long and 10 to 20 chains wide. Only 4 new attacks of the mountain pine beetle were found. The stand in this area is smaller and younger than in Camp Creek, and apparently more resistant to bark-beetle attack. A majority of 1938 infested trees are located near the mouth of Madge Creek, where the pine is larger and more mature.

Control work was conducted in this area at some time in the past, but evidently the infestation was not severe, as but few treated trees were found.

ANALYSIS OF 1939 SURVEY DATA
AND
RECOMMENDATIONS FOR CONTROL

James C. Evenden
Senior Entomologist

The check survey of the two units covered by control in May 1939, indicates a reduction in the infestation which, although fairly satisfactory, was not as great as had been hoped for. In the North Keeler unit the mountain pine beetle infestation was reduced from 600 infested trees in 1938 to an estimated loss of 323 trees in 1939, or 46 percent. In the Benning Creek unit the infestation was reduced from 724 to 405 trees in 1939, or 44 percent. However, in the lower Keeler and Star Creek areas, where severe infestations existed in 1938, reductions of 67 and 83 percent occurred, although no control measures were conducted. No explanation can be given for this occurrence within the lower Keeler Creek unit unless the control operation within the adjacent areas may have had some influence upon it; however, the logging operation within the Star Creek unit is undoubtedly responsible for the reduction in that area. Mr. Heath obtained data which also record a satisfactory status of the infestation within the Madge and Camp Creek units.

The rather heavy reinfestation within the two treated areas is somewhat difficult to explain, as the results obtained from control on small units are often quite variable. It will be noted from Mr. Heath's report that most of the new attacks found on these two units were either near burned decks, where there was some unburned bark surface, or

adjacent to trees where due to unfavorable weather conditions it had been necessary to peel the trees rather than burn them. Peeling is not a satisfactory method of treatment during late spring, and it is entirely possible that a major portion of this season's infestation originated from those two sources. Mr. Heath did not mention the occurrence of trees that had been scorched by the burning of log decks; however, it is possible that trees could have been injured by heat alone and if they did exist, they no doubt served to attract insects from adjacent untreated areas. Although, as stated, the reduction in the severity of the infestation obtained from control was not as marked as had been hoped for, one can very properly assume that had no control measures been instituted, the 1939 infestation would have been many times heavier than that recorded by the check survey, as the 1938 infestation was recorded as of a virulent and aggressive character.

A rather severe infestation of the mountain pine beetle still remains in the north Keeler and Benning Creek units. Survey data indicate a 1939 loss of .176 and .236 of an infested tree per acre, which represents .92 percent and .50 percent of the residual merchantable stand within the respective areas. Although a loss of this character is higher than the level of a normal infestation which can be economically accepted over any great period of years, under conditions peculiar to this situation the institution of maintenance control was recommended. As within the untreated areas adjacent to these two units a normal reduction occurred, it is entirely possible that a similar condition will exist within the two areas in question in 1940. If such a natural

reduction does occur, then the institution of artificial control at this time would be an unwarranted procedure. Furthermore, as such experimental data were not available, it seemed an excellent opportunity to check the benefits which can be expected through the institution of one season's control against such outbreaks. In the past, due to the large timber values at stake, we have been somewhat hesitant to forego the institution of follow-up or maintenance control, when it was believed quite possible that natural agencies, after receiving the assistance of one season's control would perform this important function for us. As a result the recommendations for this project are based upon the possibility of a normal reduction in the infestation, as well as the experimental values to be gained from the present situation.